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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,248	10/17/2005	Krishna Kiran Mukkavilli	873.0132.U1(US)	5304
29683 7590 07/18/2007 HARRINGTON & SMITH, PC 4 RESEARCH DRIVE SHELTON, CT 06484-6212			EXAMINER NGUYEN, TUAN HOANG	
			ART UNIT 2618	PAPER NUMBER
			MAIL DATE 07/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,248

Applicant(s)

MUKKAVILLI ET AL.

Examiner

Tuan H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-18, 20, 22, 24-31, 33-35, 37, 39, 40, 42, 43 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14, 16-18, 20, 22, 24-31, 33-35, 37 and 46 is/are allowed.
- 6) ☒ Claim(s) 39, 40, 42 and 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

EXAMINER'S AMENDMENT

1. Authorization for this examiner's amendment was given in a telephone interview with Mr. Walter Malinowski on 06/25/2007.

2. The application has been amended as follows: Claim 30 amended to incorporate the subject matter of claims 33 and 34.

30. (Currently Amended) A transceiver comprising: first circuitry for quantizing at least two eigenvectors for a signal to be transmitted; second circuitry for quantizing a power allocation among the at least two eigenvectors in a manner that is independent of the quantizing the at least two eigenvectors; and a transmitter for transmitting the signal along the at least two eigenvectors with the quantized power allocation among the at least two eigenvectors, wherein the power for the dominant eigenvector is P_1 and for a less dominant eigenvector is P_2 , the power allocation being $P_1 = kP_2$; where k is selected from the group 1, 0.5, 0.2, and 0, wherein the first circuitry quantizes a dominant eigenvector of the at least two eigenvectors by calculating that eigenvector in a codebook C that maximizes $\|H(C_i^1)^T\|$ for a channel matrix H , wherein the first circuitry quantizes a non-dominant eigenvector of the at least two eigenvectors by finding that vector in an orthogonal subspace to the dominant eigenvector that maximizes an inner product with a beamformer codebook in the orthogonal subspace to the said codebook C .

3. The application has been cancelled claims 33 and 34.

Reasons For Allowance

4. Claims 15, 19, 21, 23, 32, 36, 38, 41 and 44-45 canceled.
5. Claims 1-14, 16-18, 20, 22, 24-31, 33-35, 37, and 46 are allowed over the prior art record.
6. The following is an examiner's statement of reasons for allowance:

The applicant's remarks, filed on 04/16/2007 have been carefully reviewed with updated search. Consequently, reasons for allowance of claims 1-14, 16-18, 20, 22, 24-31, 33-35, 37, and 46 are set forth in according to the Examiner's amendment and the applicant's remarks state on pages 11-15.

Response to Arguments

7. Applicant's arguments, see applicant's remarks, filed on 04/16/2007, with respect to the rejection(s) of claims 1-14, 16-18, 20, 22, 24-31, 33-35, 37, 39-40, 42-43, and 46 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the

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rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 101

8. Claims 39-40 and 42-43 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 39-40 and 42-43 are claimed a program of machine-readable instructions, tangibly embodied on an information bearing medium and executable by a digital data processor, to perform actions directed toward determining a parameter usable for beamforming. However, they are drawn to claim "a program" which is no-statutory under 35 USC 101.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 39-40 and 42-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claim 39-40 and 42-43 are not

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properly described in the application as filed, and the specification was not contain a written description a program of machine-readable instructions, tangibly embodied on an information bearing medium and executable by a digital data processor, to perform actions directed toward determining a parameter usable for beamforming.

Conclusion

11. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

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Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

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401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571)272-7882882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen
Examiner
Art Unit 2618

T.N.


NAY MAUNG
SUPERVISORY PATENT EXAMINER